

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number
WO 2004/057843 A1

(51) International Patent Classification⁷: **H04M 1/02**, 1/23

(21) International Application Number:
PCT/PL2003/000146

(22) International Filing Date:
20 December 2003 (20.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
P.357977 23 December 2002 (23.12.2002) PL

(71) Applicants and

(72) Inventors: **KAZMIERCZAK, Arkadiusz** [PL/PL];
ul. Gersona 9/3, PL-85-305 Bydgoszcz (PL). **DROZ-
DOWSKI, Grzegorz** [PL/PL]; ul. B. Głowackiego 55/84,
PL-85-717 Bydgoszcz (PL).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PH, PT, RO, RU, SD, SE, SG,
SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VN, YU, ZA, ZM, ZW.

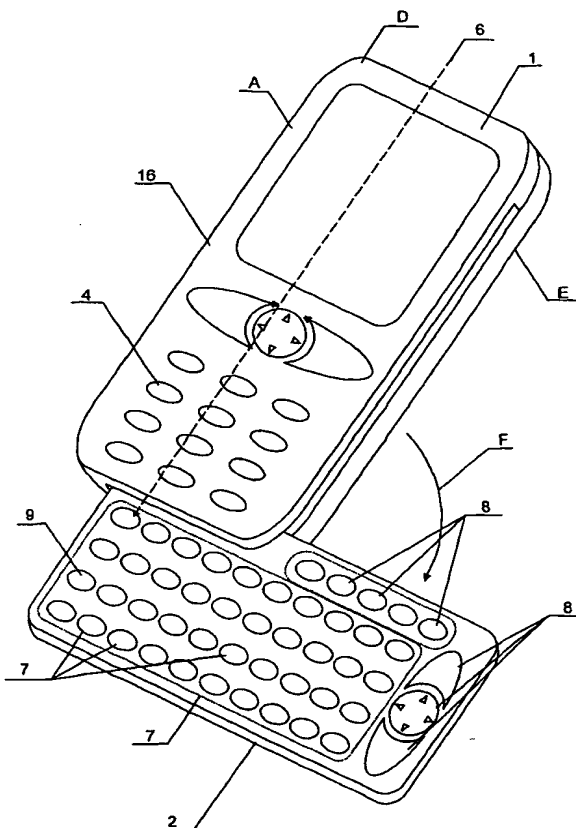
(84) Designated States (regional): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

[Continued on next page]

(54) Title: PORTABLE TELECOMMUNICATION DEVICE WITH A FOLDABLE KEYPAD



(57) Abstract: The essence of the invention is characterised by the fact the device is equipped with the additional flat alphanumeric keypad (2), folding or retracted, located between the surface (A) and surface (B) or under the surface (B) of the telecommunication device (1), attached to it by means of both a hinge and connector or by a separate connector. Moreover, the additional alphanumeric keypad (2) is located on the left or right side of the main keypad or under the main keypad (4) of the telecommunication device and has a mechanism which prevents the additional alphanumeric keypad (2) from opening and closing. Moreover, the additional alphanumeric keypad (2) is non-replaceable or replaceable as a whole, together with other electronic devices, so the telecommunication device (1) and the additional alphanumeric keypad (2) constitute one integrated device.

WO 2004/057843 A1



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Portable Telecommunication Device

Object of the invention. The subject of the invention is a portable communication device in the form of a portable phone or that of a portable phone connected to a computer, especially for use in the cellular networks of the second, third and fourth generation, as well as in the networks of fixed phones.

Technical field. So far we have known GSM portable phone systems based on alphanumeric keypads, in which four functions are assigned to a single key. This technology is both cheapest and most widespread. Portable phones, otherwise called communicators, i.e. devices which consist of an average GSM phone and a PC, are equipped with two keypads. One of them is merely a numeric keypad, while the other is a QWERTY keypad. Similar technology has been described in the patent pending US 6,427,078.

Aspect of the invention. The essence of the invention consists in the fact that the portable communication device is equipped with additional flat alphanumeric keypad, folding or retracted, located between two surfaces or under the surface of the lower housing. The keypad is attached (mechanically and electrically) to the portable telecommunication device by means of a hinge or by a separate connector. The additional keypad is attached on the right or left side or below the main keypad of the telecommunication device. The additional keypad is equipped with

a mechanism that prevents the additional alphanumeric keypad from opening and closing. Moreover, the additional alphanumeric keypad is non-exchangeable or exchangeable with other electronic devices as a whole, and together with the additional alphanumeric keypad it constitutes one integrated device.

The additional alphanumeric keypad is located under the surface of the telecommunication device and is attached by means of a hinge or a swivel arm.

The additional alphanumeric device is located between the surfaces of the telecommunication device and it is folding.

The additional alphanumeric keypad is located between the surfaces of the telecommunication device and it can be retracted along the roll axis of the telecommunication device and preferably rotated by 90 degrees.

After it is opened, the additional alphanumeric keypad, located between the surfaces of the telecommunication device, can be moved perpendicularly to the roll axis of the telecommunication device.

The additional alphanumeric keypad is equipped with alphanumeric and function keys, the number of which depends on the currently used alphabet.

The additional alphanumeric keypad has two holes located at an appropriate distance, through which passes a bolt of the hinge. The choice of the hole depends on the location of the additional alphanumeric keypad.

The additional alphanumeric keypad is equipped with the device illuminating the alphanumeric symbols and pictograms situated on the surface of individual keys. The intensity of the display of individual keys is adjustable.

The telecommunication device is equipped with a mechanism that locks the additional alphanumeric device when it is opened or closed.

The additional alphanumeric keypad is preferably attached to the hinge by means of multicontact connectors.

The multicontact connectors also attach camcorder (17) and MP3 module (18).

Beneficial effects resulting from the use of the aspect of the invention. The portable telecommunication device consists of two parts, both of which are equipped with the additional flat alphanumeric keypad, situated on the surface of the telecommunication device and connected to either part by means of a hinge or that of a separate connector. The additional alphanumeric keypad is attached to the other part of the telecommunication device and is folding by a chosen angle on the right or left side of the roll axis.

The use of additional alphanumeric keypads integrated in the portable communication devices opens up a number of possibilities. Using a GSM phone, one can more easily and quickly create a short message and send it as an SMS or email. The possibility of using terminals equipped with alphanumeric keypad considerably increases its usability.

Description of the drawing figures. The subject of invention is shown in the drawing where fig.1 shows a schematic diagram of the portable telecommunication device with the additional alphanumeric keypad in the 'opened' position, fig.2 shows a schematic diagram (top view) of the portable telecommunication device with the additional alphanumeric keypad in the 'closed' position, fig.3 shows a schematic diagram (intersection view) of the portable telecommunication device with the additional alphanumeric keypad, fig.4 shows a schematic diagram (intersection view) of the portable telecommunication device with the additional alphanumeric keypad attached to the lower part of the housing, fig.5 shows a schematic diagram (intersection view) of the portable telecommunication device with the additional alphanumeric keypad attached to the lower part of the housing by means of a hinge in the form of a swivel arm, fig.6 shows a schematic diagram (intersection view) of the portable telecommunication device with the additional alphanumeric keypad attached as an external module, fig.7 shows a schematic

diagram of the portable telecommunication device with the additional alphanumeric keypad located on the right, in 'opened', 'ready to use' position, fig.8 shows a schematic diagram of the portable telecommunication device with the additional alphanumeric keypad located in the central part of the device, fig.9 shows a schematic diagram of the portable telecommunication device with the additional alphanumeric keypad retracted on the left or on the right, fig.10 shows a schematic diagram of the portable telecommunication device with the additional alphanumeric keypad that can be retracted along the roll axis and adjusted to a working position, fig.11 shows a schematic diagram of the portable telecommunication device with the additional alphanumeric keypad detached from the main device, fig.12 shows a schematic diagram with the camcorder used instead of the additional alphanumeric device, fig.13 shows a schematic diagram of the portable telecommunication device with MP3 module, instead of the additional alphanumeric keypad), attached by means of multicontact connection cable.

The subject of invention is shown in the diagrams from fig.1 to fig.13, while fig.1 shows a schematic diagram of the portable communication device with all the details concerning its structure and the essence of the invention.

The diagrams from fig.1 to fig.13 show the elements and their position in the portable telecommunication device as follows: 1 - telecommunication device, 2 - the additional alphanumeric keypad, 3 - hinge, 4 - main keypad, 5 - swivel arm, 6 - roll axis, 7 - alphanumeric keys, 8 - function keys, 9 - individual keys, 10 - hole, 11 - bolt, 12 - alphanumeric symbols, 13 - pictograms, 15 - 'closed' position, 16 - 'opened' position, 17 - camcorder 18- MP3 module, 19 - multicontact connector, surface A, surface B, surface C, part D, part E, angle F.

The operation of the telecommunication device is as follows: the portable communication device 1 is activated by pressing an individual key 9 on the main keypad 4. After the additional alphanumeric device 2 has been set in an 'open' position 16 on the left or right, along the roll axis 6, the device is ready for receiving data . Next, one feeds the data in the form of text or in

the form of pictograms 13 by means of pressing individual keys 9. After the text has been introduced, it is sent in the form of an SMS or in that of an email. The additional alphanumeric keypad 2 is attached to the portable telecommunication device by means of multicontact connector 19, which also enables a user to attach other devices increasing the usability of the telecommunication device 1, among others camcorder (17) or MP3 module.

The technology based on the essence of the invention can be applied in the portable and fixed phones operating in all types of network. Besides, additional alphanumeric keypads can be attached to all types of hybrid devices based on computer and portable phone technologies.

What is claimed is:

1. The portable telecommunication device is characteristic of the fact that it is equipped with the additional flat alphanumeric keypad, folding or retracted, located among surface (A) and surface (B), or under surface (B) of the telecommunication device (1), attached mechanically and electrically by means of both a hinge and connector or by means of a separate connection with the telecommunication device (1). The additional alphanumeric keypad (2) is mounted on the left or right, or under the main keypad (4) of the telecommunication device and is equipped with a mechanism that prevents the alphanumeric keypad from opening and closing. The additional alphanumeric keypad is non-exchangeable or exchangeable as a whole, together with other electronic devices, so the telecommunication device (1) and the additional alphanumeric keypad (2) constitute one integrated device.

2. The portable device, according to claim (1), is characteristic of the fact that the additional alphanumeric keypad (2) is located under the surface B of the telecommunication device (1). The keypad is attached to the device by means of a hinge (3) or that of a swivel arm (5).

3. The portable device, according to claim 1, is characteristic of the fact that the additional alphanumeric keypad (2) is located between surface (A) and surface (B) of the telecommunication device (1) and that it can be opened.

4. The portable device, according to claim 1, is characteristic of the fact that the additional alphanumeric keypad (2) is located between surface (A) and surface (B) of the telecommunication device and that it can be retracted along the roll axis (6) of the telecommunication device (1) and preferably rotated by 90 degrees.

5. The portable device, according to claim 1, is characteristic of the fact that the additional alphanumeric keypad (2) is located between surface (A) and surface (B) of the

telecommunication device and that the keypad can be moved perpendicularly to the roll axis (6) of the telecommunication device (1).

6. The portable device, according to claim 1, is characteristic of the fact that the additional alphanumeric keypad (2) is equipped with alphanumeric keys (7) and function keys (8) with a certain number of individual keys (9) typical of a given alphabet.

7. The portable device, according to claim 1, is characteristic of the fact that the additional alphanumeric keypad (2) is equipped with two holes (10), located at a certain distance, through which passes the bolt (11) of the hinge (3) and that the choice of the hole (10) depends on the location of the additional alphanumeric keypad (2).

8. The portable device, according to claim 1, is characteristic of the fact that the additional alphanumeric keypad (2) is equipped with a device that illuminates the alphanumeric symbols (12) and pictograms (13) located on individual keys (9) and that the intensity of illumination is adjustable.

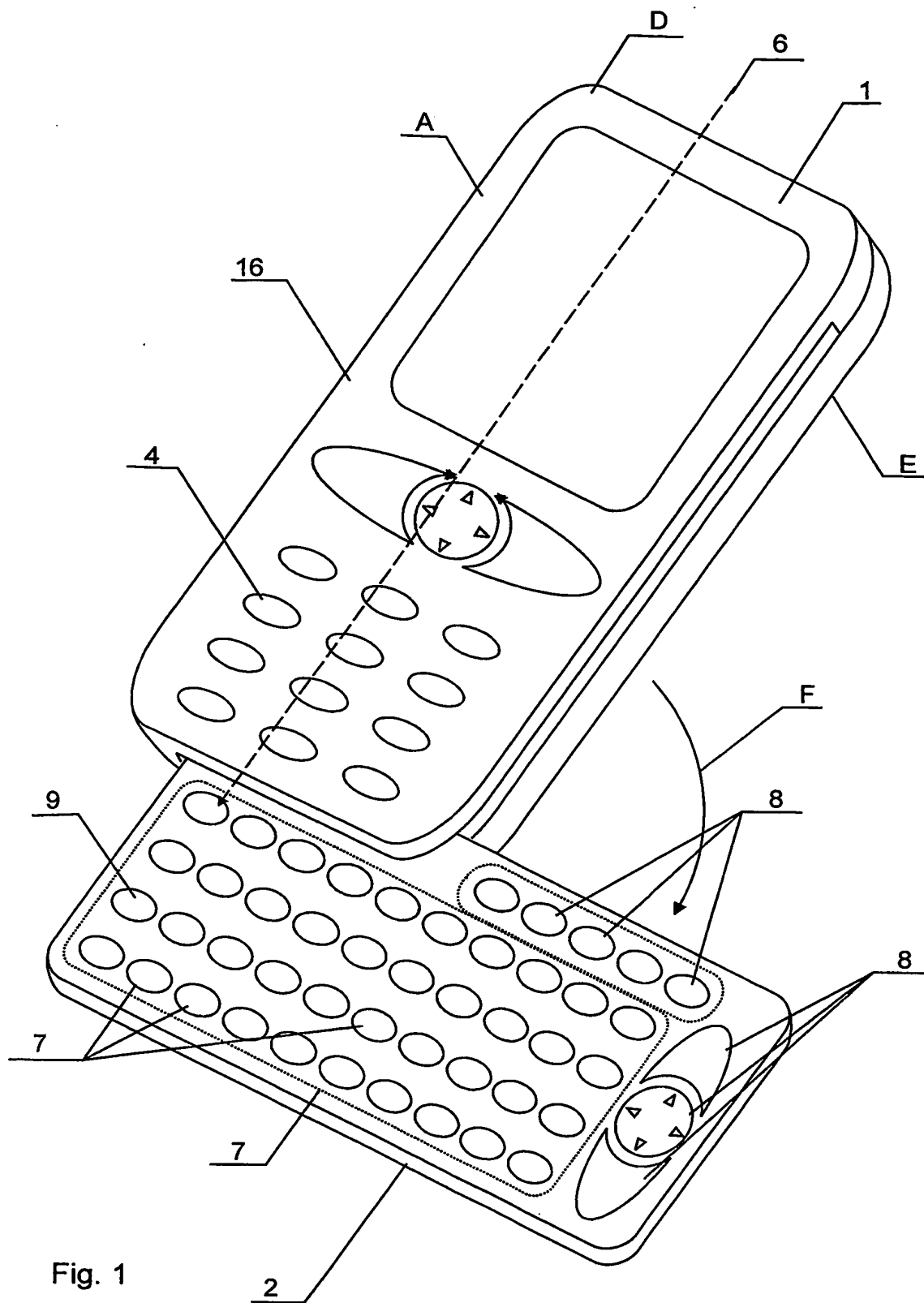
9. The portable device, according to claim no 1, is characteristic of the fact that it is equipped with a mechanism that blocks the additional alphanumeric keypad (2) in both 'closed' position (14) and 'opened' position (15).

10. The portable device, according to claim no 1, is characteristic of the fact that the additional alphanumeric keypad (2) is attached to the hinge (3) of the telecommunication device (1) by means of multicontact connector (19).

11. The portable device, according to claim no 1, is characteristic of the fact that multicontact connector is used for attaching camcorder (17) or MP3 module (18).

12. The portable device, according to claim no 1, is characteristic of the fact that it is divided into part (D) and part (E) equipped with the additional flat alphanumeric keypad (2) mounted on the surface (C) of the telecommunication device (1), that the keypad is attached to the telecommunication device by means of both a hinge and connector or by means of a separate

connector with part (D) and that the additional alphanumeric keypad (2) is located on part (D) of the communication device (1) and preferably folding by a chosen angle (F) from the right or left side of the roll axis (6).



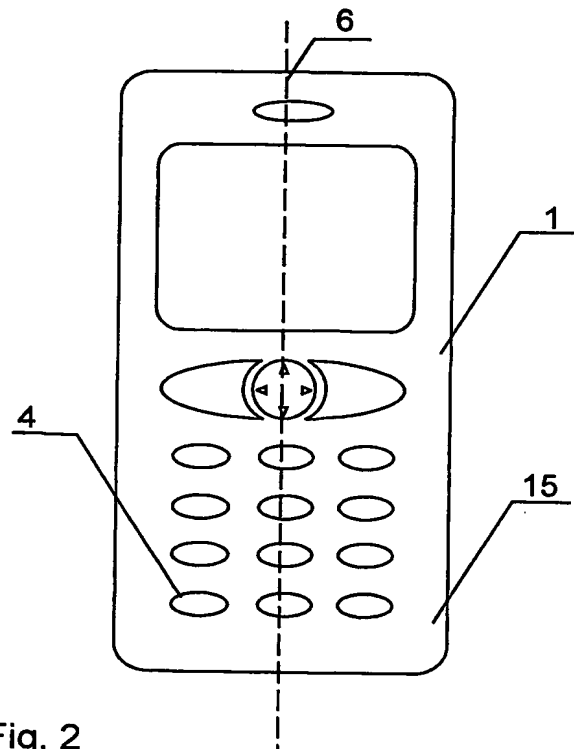


Fig. 2

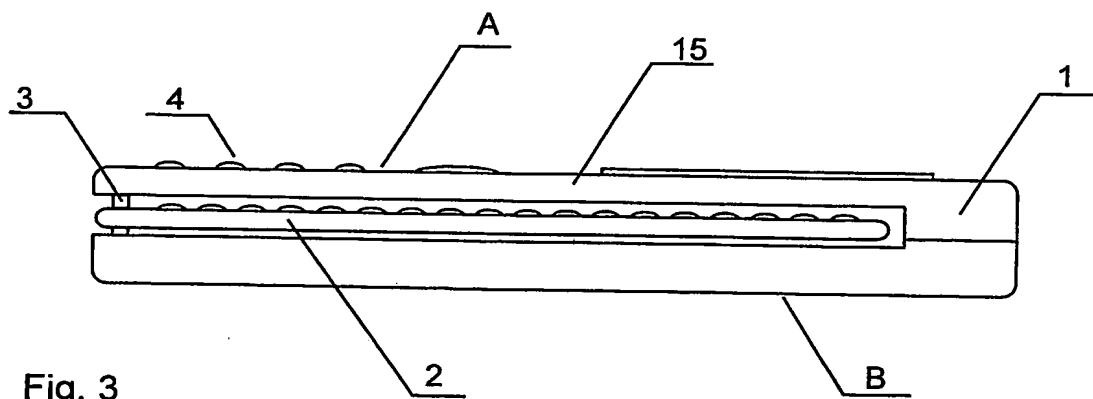


Fig. 3

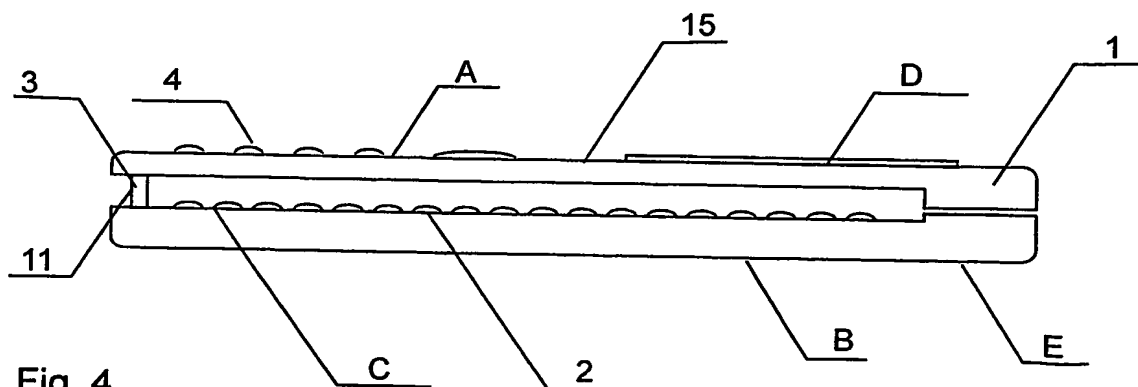


Fig. 4

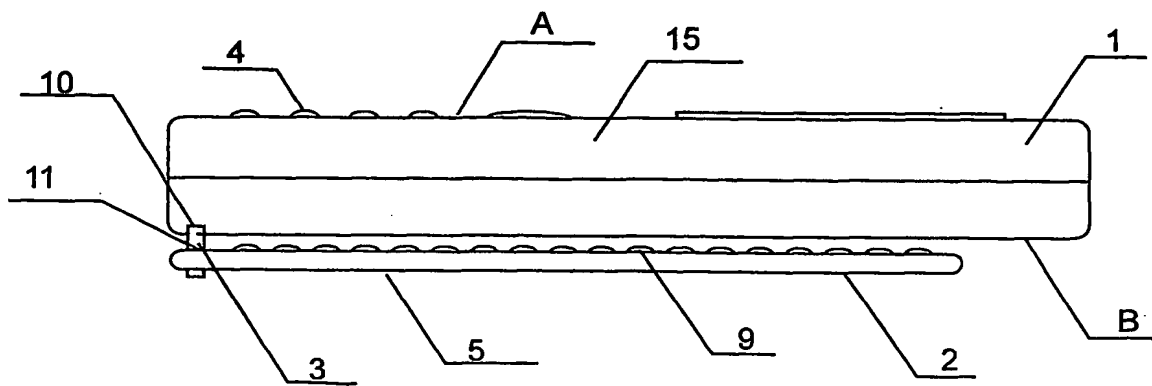


Fig. 5

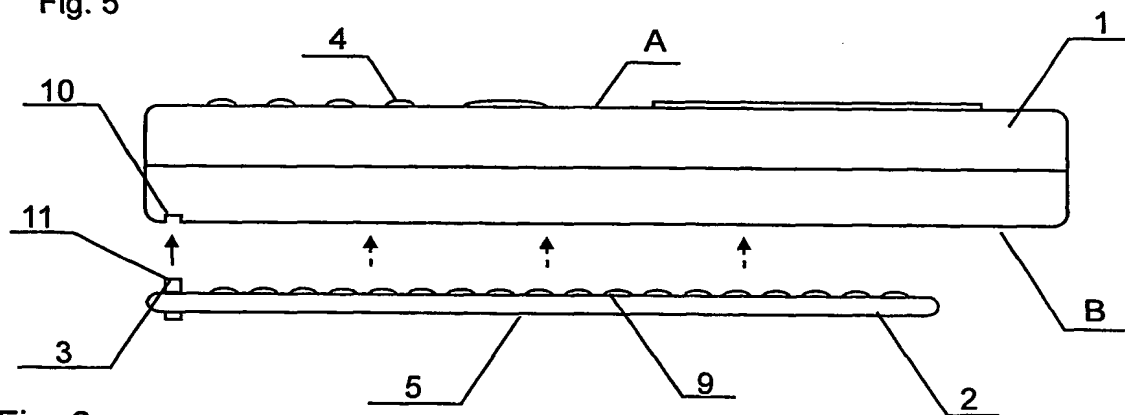


Fig. 6

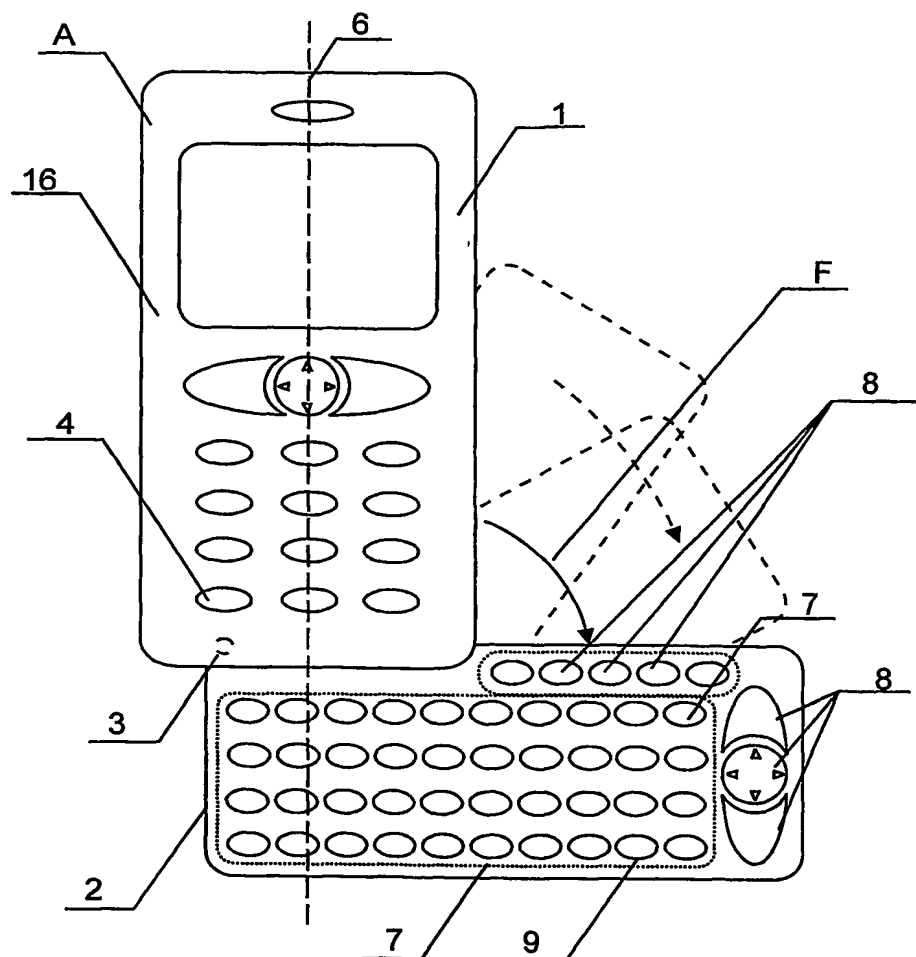


Fig. 7

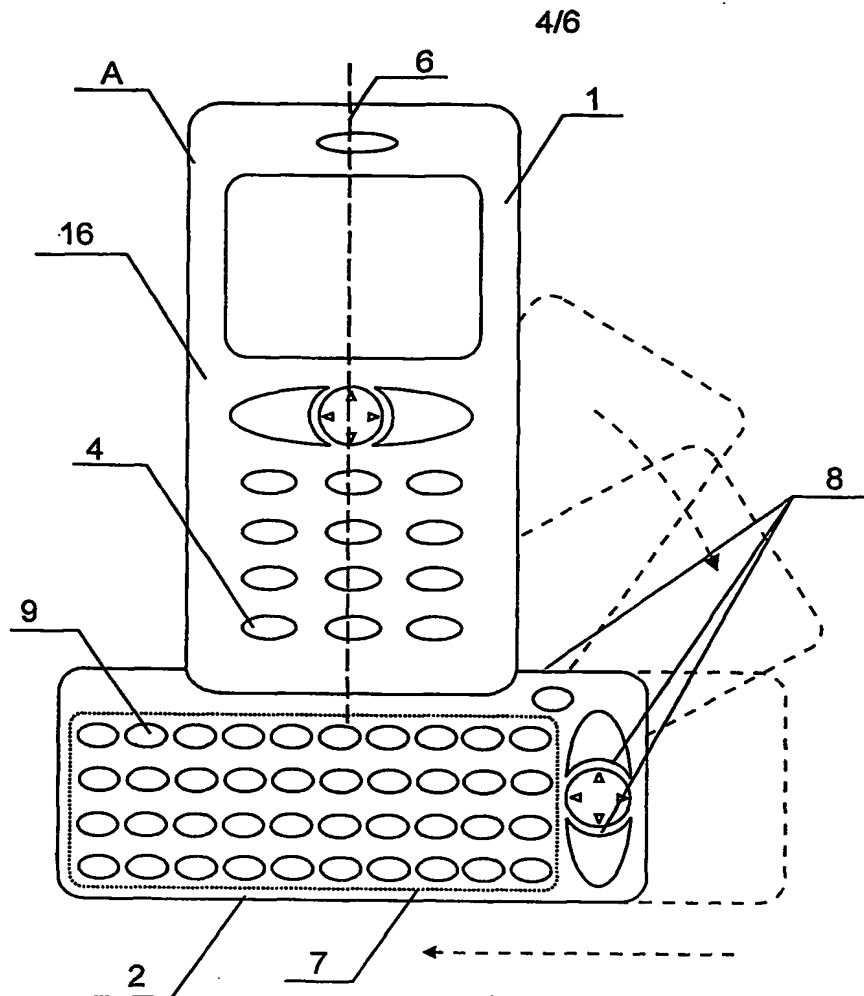


Fig. 8

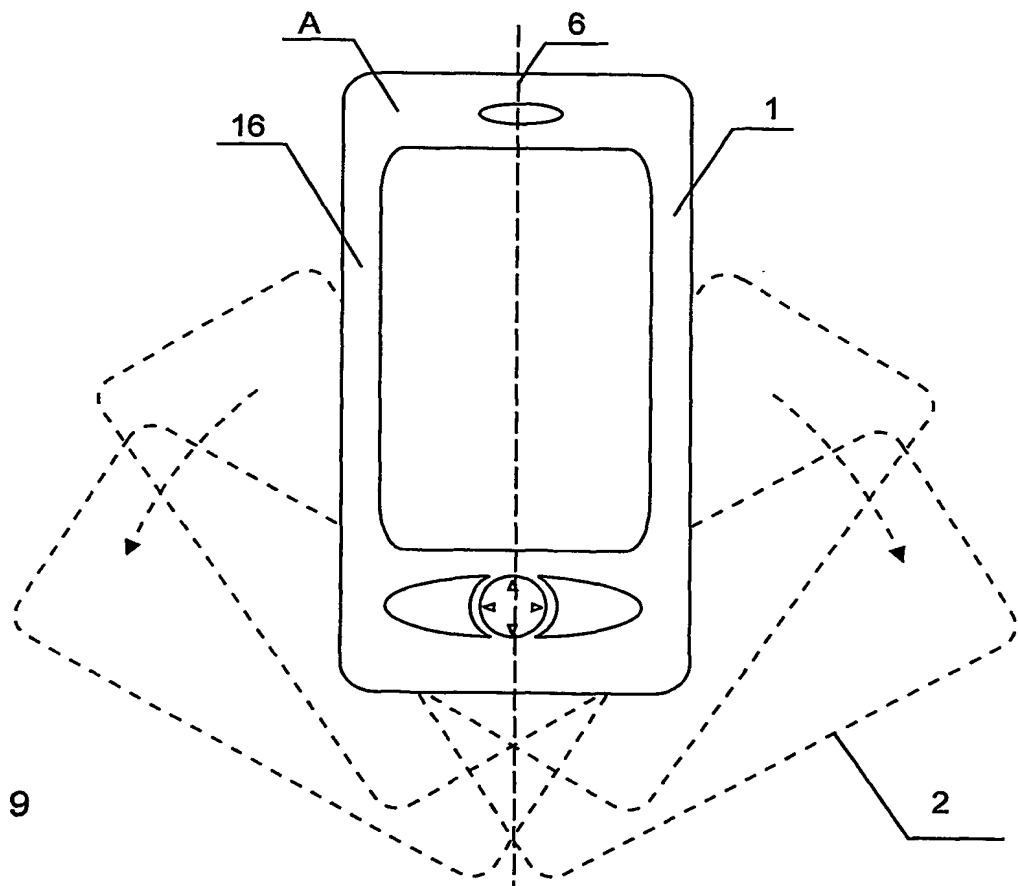


Fig. 9

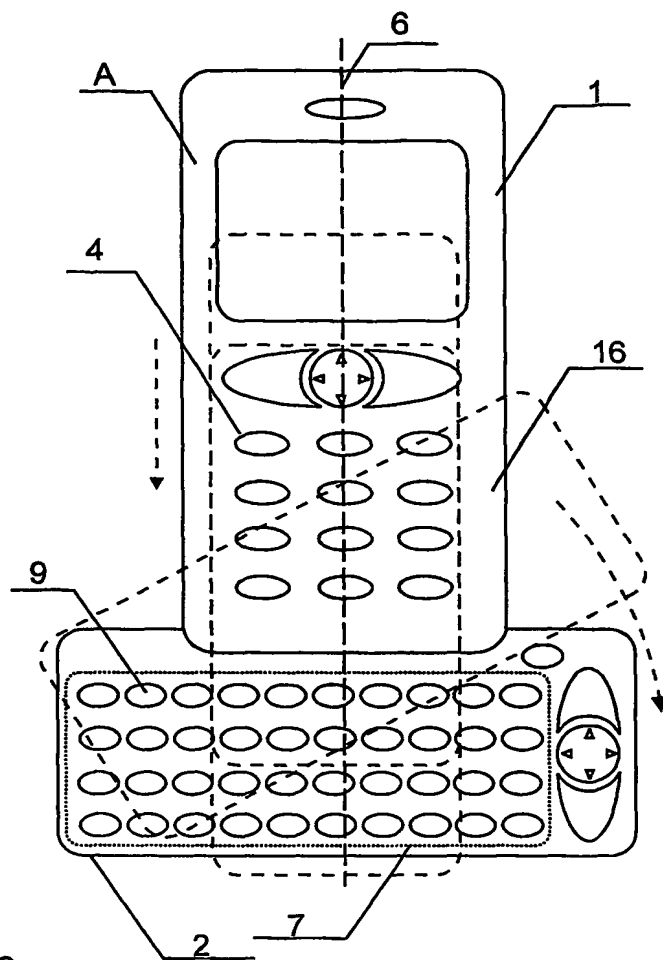


Fig. 10

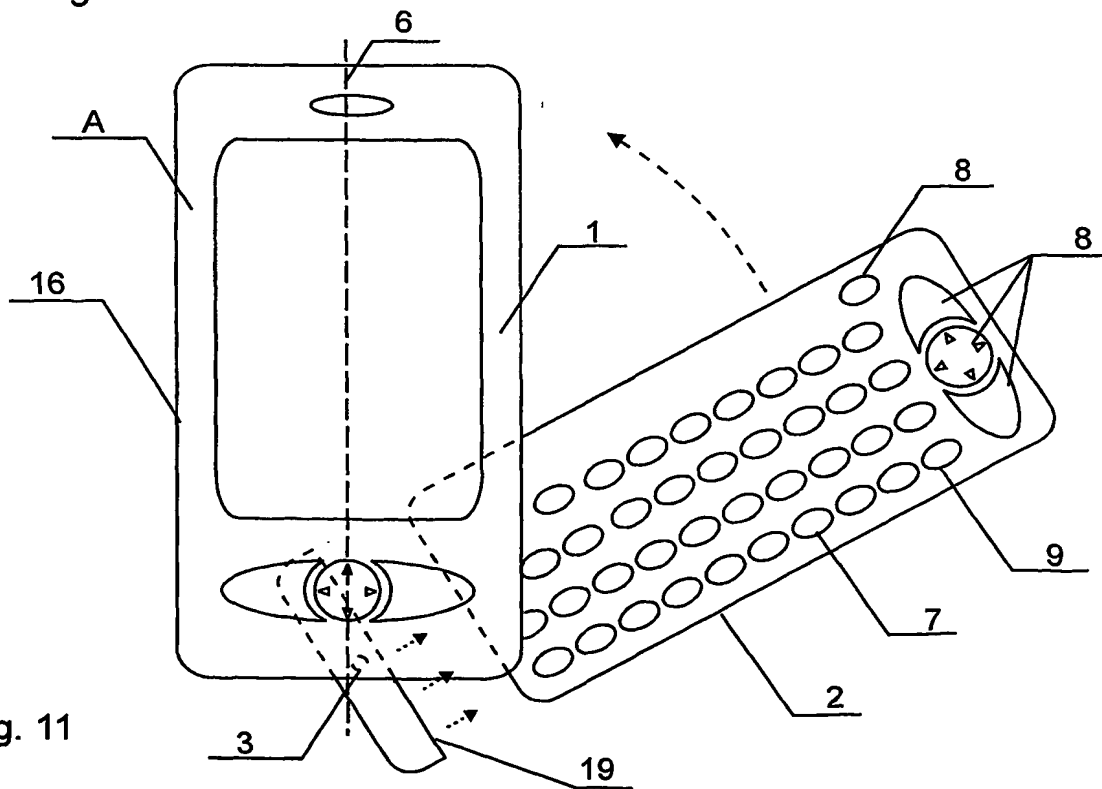


Fig. 11

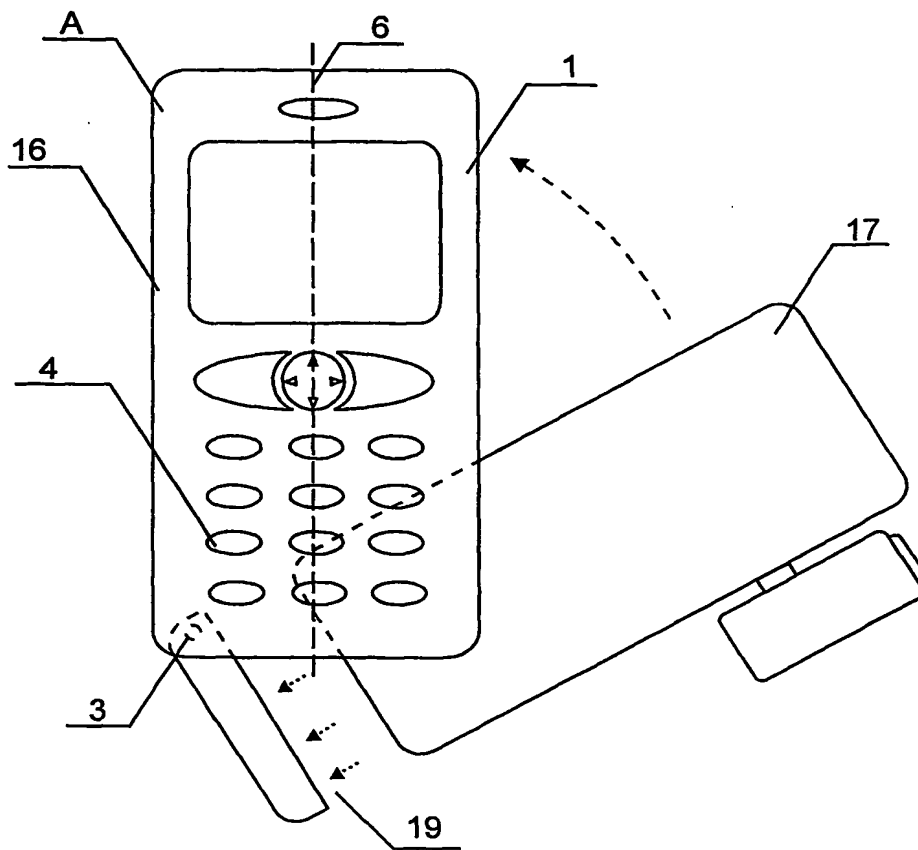


Fig. 12

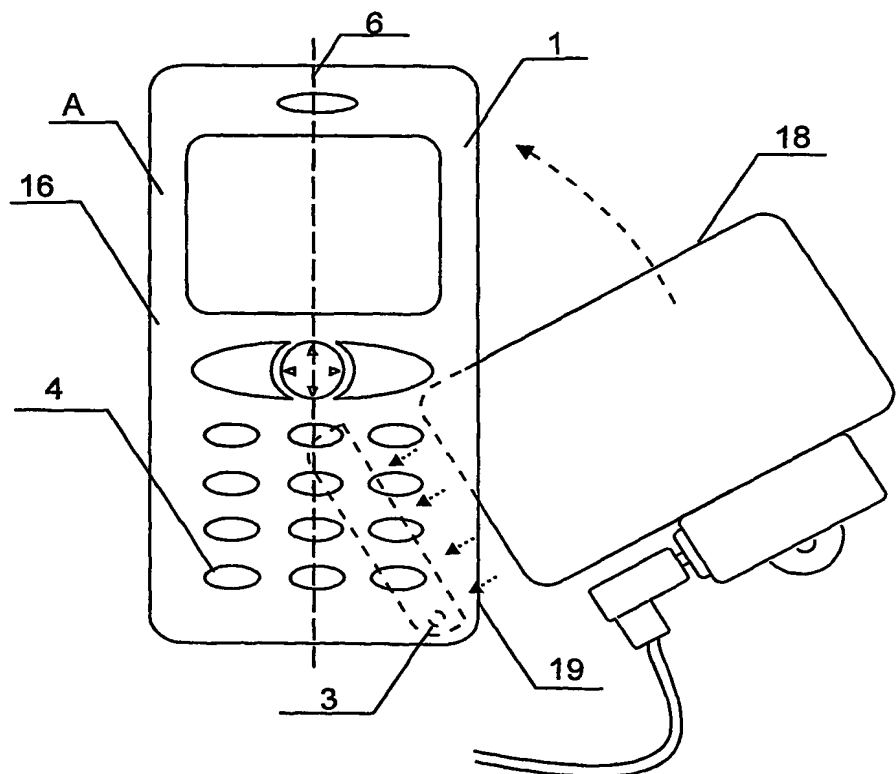


Fig. 13

INTERNATIONAL SEARCH REPORT

International Application No

PCT/PL 03/00146

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H04M1/02 H04M1/23		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC 7 H04M G06F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, PAJ, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 375 683 A (MOTOROLA INC) 20 November 2002 (2002-11-20) abstract page 5, line 15-30 claims 1-9 figures 1-6	1-12
X A	WO 01/84728 A (KWON YONG SOON) 8 November 2001 (2001-11-08) abstract page 3, line 10 -page 4, line 10 figures 2-12 claims 1-7 --- -/-	1-10, 12 11
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family		
Date of the actual completion of the international search 25 May 2004		Date of mailing of the international search report 04/06/2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Maciejewski, R

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International Application No

PCT/PL 03/00146

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 06, 4 June 2002 (2002-06-04) & JP 2002 057771 A (ALPS ELECTRIC CO LTD), 22 February 2002 (2002-02-22) abstract	1,2,4,6, 8,9,12
P,X	WO 03/028346 A (4151003 CANADA INC ;MIRAMONTES IVAN (US)) 3 April 2003 (2003-04-03) abstract figures 8,9 page 18, line 3-15	1,2,4,6, 8-10,12
P,X	WO 03/050665 A (RAST ASSOCIATES LLC ;LAHR ROY J (US)) 19 June 2003 (2003-06-19) abstract figures 1-7 claims 1-11,14	1-10,12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/PL 03/00146

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2375683	A	20-11-2002	NONE	
WO 0184728	A	08-11-2001	KR 2000064177 A AU 5507701 A CN 1436406 T EP 1279236 A1 JP 2003533089 T WO 0184728 A1	06-11-2000 12-11-2001 13-08-2003 29-01-2003 05-11-2003 08-11-2001
JP 2002057771	A	22-02-2002	NONE	
WO 03028346	A	03-04-2003	US 2002072395 A1 WO 03028346 A1	13-06-2002 03-04-2003
WO 03050665	A	19-06-2003	WO 03050665 A1 US 2003132863 A1	19-06-2003 17-07-2003